

book computers to an emerging and rapidly growing market of handheld devices, including smart phones (e.g., the APPLE IPHONE, ANDROID phones, WINDOWS phones, SYMBIAN phones), tablet computers (e.g., the APPLE IPAD, ANDROID tablets), gaming devices (e.g., NINTENDO or PLAYSTATION portable gaming devices, the APPLE IPOD), multimedia devices (e.g., the APPLE IPOD), and combinations thereof. Many of these devices can enable rich user-interactivity by including combinations of output, input, and other sensory devices, such as touch- or pressure-sensitive displays (using capacitive or resistive technologies, for example), still and video cameras, Global Positioning System (GPS) receivers, magnetic compasses, gyroscopes, accelerometers, light sensors, proximity sensors, microphones, speakers, etc. These devices can also comprise a variety of communications devices, such as combinations of cellular modems (e.g., Global System for Mobile Communications (GSM), Code division multiple access (CDMA)), Wireless Fidelity (Wi-Fi) radios, Bluetooth radios, Near Field Communication (NFC) devices, etc. Many mobile consumer devices are expandable, such that a user can add new hardware and functionality not present during manufacture of the device. It will be appreciated that as the market for mobile consumer devices expands and develops, the functionality of these devices will also expand to utilize new and improved user-interaction devices and communications devices. The embodiments described herein are expansive and can also utilize any future developments in the field of mobile consumer devices.

[0061] The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed is:

1. A sample holder configured to hold a lateral-flow chromatographic assay cassette in relation to a detector device, wherein the sample holder includes an adjustable variable angle stage configured for adjusting an angle of the lateral-flow chromatographic assay cassette in relation to an illuminating light source and a detector device, wherein the illuminating light source and the device are cooperatively positioned in relation to the lateral-flow chromatographic assay cassette such that an angle of illumination and an angle of reflection are adjusted using the adjustable variable angle stage so as to optimize an elastic light scattering signal from the lateral-flow chromatographic assay cassette.

2. The sample holder of claim 1, wherein the angle of incidence and the angle of reflection are approximately 45°.

3. The sample holder of claim 1, wherein at least one wavelength filter is interposed between the illuminating light source and the lateral-flow chromatographic assay cassette.

4. The sample holder of claim 1, wherein the illuminating light source includes at least one of ambient light, sunlight, an LED light, an incandescent lamp, or a gas-discharge lamp.

5. The sample holder of claim 1, wherein the illuminating light source is configured to yield at least one wavelength of light selected to convert the signal of the lateral-flow chromatographic assay cassette to a fluorescent emission signal.

6. The sample holder of claim 1, wherein the illuminating light source includes at least one focusing apparatus for focusing the light source on the lateral-flow chromatographic assay cassette.

7. The sample holder of claim 1, wherein the sample holder is configured to allow adjustment the angle of the lateral-flow chromatographic assay cassette relative to the light source and the detector device.

8. The sample holder of claim 1, wherein the sample holder is configured to adjust the angle of the lateral-flow chromatographic assay cassette relative to the light source and the detector device to improve at least one of a signal-to-noise ratio or a detection limit.

9. A diagnostic testing system, comprising:

a lateral-flow chromatographic assay cassette that includes at least one ligand immobilized thereon configured to interact with an analyte of interest to provide readout related to the presence of the analyte of interest in the sample; and

a sample holder configured to angle the lateral-flow chromatographic assay cassette in relation to a cassette reader that includes:

an illumination light source, a detector device, means for transmitting an illuminating light from the illumination source to the lateral-flow chromatographic assay cassette, means for transmitting a signal from the lateral-flow chromatographic assay cassette to the detector device, and an adjustable variable angle stage configured for adjusting an angle of the lateral-flow chromatographic assay cassette in relation to an illuminating light source and a detector device, wherein the illuminating light and the and the detector device are positioned to illuminate at least a portion of the lateral-flow chromatographic assay cassette and the adjustable variable angle stage is adjustable such that an angle of illumination and an angle of reflection are adjusted in relation to the lateral-flow chromatographic assay cassette so as to optimize an elastic light scattering signal from the lateral-flow chromatographic assay cassette.

10. The diagnostic testing system of claim 9, wherein the illuminating light source includes at least one of ambient light, sunlight, an LED light, an incandescent lamp, or a gas-discharge lamp.

11. The diagnostic testing system of claim 9, wherein the illuminating light source includes at least one focusing apparatus for focusing the light source on the lateral-flow chromatographic assay cassette.

12. The diagnostic testing system of claim 9, wherein the sample holder is configured to allow adjustment the angle of the lateral-flow chromatographic assay cassette relative to the light source and the detector device.

13. The diagnostic testing system of claim 9, wherein a limit of detection for the analyte of interest is within a clinically accepted range.

14. A method for detecting analyte of interest in a sample, the method comprising:

providing a lateral-flow chromatographic assay cassette configured for detection of the analyte of interest;

applying a liquid sample to the lateral-flow chromatographic assay cassette, wherein the liquid sample is expected to include the analyte of interest;